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10/592,967

09/14/2006

Shigeki Satou

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SEED INTELLECTUAL PROPERTY LAW GROUP PLLC

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SUITE 5400

SEATTLE, WA 98104

EXAMINER

PAK, HANNAH J

ART UNIT

PAPER NUMBER

1796

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DELIVERY MODE

01/26/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/592,967 | Applicant(s) SATO ET AL. | |
| | Examiner Hannah Pak | Art Unit 1796 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/13/2009 has been entered.
2. All outstanding rejections, except for those maintained below, are withdrawn in light of applicant's amendment filed on 11/13/2009.
3. The text of those actions of Title 35, U.S. Code not included in this action can be found in a prior office action.
4. The applicants have incorporated limitations from canceled claims 5 and 6 into claim 3.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Donohue et al. (US 4,959,330) in view of Non-Patent Literature ("Terpinyl Acetate." Material Data Sheet. Chemtex International Inc., 1 April 2003, Pages 1-5).

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Donohue et al. disclose a dielectric paste (or thick film) containing among other things, a solvent and various polymeric binders, including ethyl cellulose binder (Col. 5, lines 8-30, lines 60-65 and Col. 6, lines 10-15).

Although Donohue et al. do not specify the average molecular weight of their ethyl cellulose binder as required by claims 1 and 2, it can be inferred from the disclosure of other polymeric binders having an average molecular weight of 150,000-350,000 that the optimum average molecular weight of the ethyl cellulose binder lies in a similar average molecular weight range (Col. 6, lines 10-40). This is especially true in this case since Donohue et al. describes ethyl cellulose binder, which is inclusive of the claimed ethyl cellulose binder, and leaves up to one of ordinary skill in the art to identify those having the appropriate molecular weight useful for forming a dielectric paste.

Therefore, one of ordinary skill in the art would have determined the ethyl cellulose binder having the optimum molecular weight, such as those claimed, in forming the dielectric paste taught by Donohue et al., via routine experimentation, see MPEP § 2144.05, IIB.

As to the claimed solvent, Donohue et al. disclose that any conventional solvent having a boiling point of 130-350 degrees Celsius is useful for forming a dielectric paste (Col. 5, lines 20-27). According to the non-patent literature, the claimed solvent, i.e. terpinyl acetate, is a conventional solvent having a boiling point of 209 degrees Celsius (Page 3). Therefore, it would have been obvious to one of ordinary skill in the art to employ the conventional solvent having the boiling point taught by Donohue et al. with a reasonable expectation of successfully forming a dielectric paste.

6. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Donohue et al. (US 4,959,330) in view of Non-Patent Literature ("Terpinyl Acetate." Material Data Sheet. Chemtex International Inc., 1 April 2003, Pages 1-5) and Kobayashi (Machine Translation of JP 09-124771).

Donohue et al. disclose printing a dielectric paste (or thick film) containing among other things, a solvent and various polymeric binders, including ethyl cellulose binder and poly(vinyl butyral, on a substrate, i.e. green ceramic tape (sheet) (Col. 5, lines 1-30, lines 60-67 and Col. 6, lines 10-15).

Although Donohue et al. do not specify the average molecular weight of their ethyl cellulose binder as required by claims 1 and 2, it can be inferred from the disclosure of other polymeric binders having an average molecular weight of 150,000-350,000 that the optimum average molecular weight of the ethyl cellulose binder lies in a similar average molecular weight range (Col. 6, lines 10-40). This is especially true in this case since Donohue et al. describes the ethyl cellulose binder, which is inclusive of the claimed ethyl cellulose binder, and leaves up to one of ordinary skill in the art to identify those having the appropriate molecular weight useful for forming a dielectric paste.

Therefore, one of ordinary skill in the art would have determined the ethyl cellulose binder having the optimum molecular weight, such as those claimed, in forming the dielectric paste taught by Donohue et al., via routine experimentation, see MPEP § 2144.05, IIB.

As to the claimed solvent, Donohue et al. disclose that any conventional solvent having a boiling point of 130-350 degrees Celsius is useful for forming a dielectric paste (Col. 5, lines 20-27). According to the non-patent literature, the claimed solvent, i.e. terpinyl acetate, is a conventional solvent having a boiling point of 209 degrees Celsius (Page 3). Therefore, it would have been obvious to one of ordinary skill in the art to employ the conventional solvent having the boiling point taught by Donohue et al. with a reasonable expectation of successfully forming a dielectric paste.

As to the claimed properties of butyral system resin, Donohue et al. disclose employing butyral resins, i.e. poly(vinyl butyral), but does not specify their claimed properties as required by claim 3. However, Kobayashi teaches employing polyvinyl butyral resin having a degree of polymerization of 1,500-2,500 and a degree of butyralization of at least 65 mol%, which is inclusive of the claimed range of equal to or larger than 1000 and claimed range of equal to or larger than 64 mol%, respectively, for the purpose of improving the storage stability and adhesiveness of a film (see, for example, abstract). Thus, it would have been obvious to one of ordinary skill in the art to use the polyvinylbutyral resin having the claimed properties taught by Kobayashi to obtain desired properties useful for films.

Response to Arguments

7. The applicants' arguments filed 11/13/2009 are fully considered but are not found persuasive for the following reasons below with respect to Donohue and Kobayashi

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references. The arguments with respect to Drozdyk and Adams references are moot due to the discontinuation of these references.

(A)

Applicants' Argument: Donohue fails to teach, suggest, or motivate the weight average molecular weight range for ethyl cellulose (see Page 6 of the Applicants' remarks). The molecular weight range disclosed by Donohue is for multipolymer, and does not apply to ethyl cellulose binder, showing Col. 6, lines 29-43 of Donohue as support (see Pages 7-8 of the Applicants' Remarks).

Examiner's Response: As indicated above, although Donohue et al. do not specify the average molecular weight of their ethyl cellulose binder as required by claims 1 and 2, it can be inferred from the disclosure of other polymeric binders having an average molecular weight of 150,000-350,000 that the optimum average molecular weight of the ethyl cellulose binder lies in a similar average molecular weight range (Col. 6, lines 10-40). This is especially true in this case since Donohue et al. describes the ethyl cellulose binder, which is inclusive of the claimed ethyl cellulose binder, and leaves up to one of ordinary skill in the art to identify those having the appropriate molecular weight useful for forming a dielectric paste. Thus, one of ordinary skill in the art would have determined the ethyl cellulose binder having the optimum molecular weight, such as those claimed, in forming the dielectric paste taught by Donohue et al., via routine experimentation, see *MPEP* § 2144.05, *IIB*.

(B)

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Applicants' Argument: **(1)** The range, 150,000-350,000 disclosed in Donohue is largely outside the range of 100,000-190,000 recited in claim 1 (see Page 8 of the Applicants' Remarks). **(2)** The comparative and workings examples provided in the present application as filed demonstrate the criticality of the range recited in claim 1 (see Page 8 of the Applicants' Remarks).

Examiner's Response: **(1)** The range, 150,000-350,000 disclosed in Donohue is not outside the claimed range of 100,000-190,000, but overlaps. According to MPEP § 2144.05, in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. The applicant must show that the particular range is critical, generally by showing the claimed range achieves unexpected results relative to the prior art range in which the applicants attempted and brings us to the second response. **(2)** The applicants' arguments and examples in the specification directed to alleged unexpected results do not overcome the prima facie case of obviousness established in the record. While it is true that a showing of unexpected results can rebut any inference of obviousness established by the prior art of record, the applicants have the burden of showing that the claimed invention as whole imparts such unexpected results. Here, the applicants have not demonstrated that the working examples and its comparative examples in the specification show that the claimed subject matter as whole imparts unexpected results, *see MPEP § 716.02*. In working example 1 of the specification, it is unclear whether the amounts of other various components, e.g. organic vehicle or dispersing agent or surfactant or powder, or ethyl cellulose alone is responsible for the overall effect of the product. It is also not

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lucid whether the amount of ethyl cellulose or the molecular weight of the ethyl cellulose affects the outcome of the product. The applicants also do not point to any averment in the specification regarding unexpected results in the request for reconsideration, see *MPEP* § 716.02. Moreover, the applicants have not shown why the limited showing in the examples are commensurate in scope with the degree of protection sought by the very broad claims of the instant application, see *MPEP* § 716.02. While working example 1 is directed to a specific type of organic solvent, e.g. isoborynl acetate, in particular amount and ethyl cellulose having a particular molecular weight of 130,000, the claims are not so limited. Accordingly, the applicants fail to rebut the prima facie case of obviousness established in the record.

(C)

Applicants' Argument: **(1)** Kobayashi recites specific advantages that have nothing to do with those obtained by the Applicants of the present invention (see Page 10 of the Applicants' Remarks). **(2)** Kobayashi attributes advantages of its invention to using a polyvinyl butyral resin and three other specific components as essential constituents (see Page 10 of the Applicants' Remarks).

Examiner's Response: **(1)** The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant, see *MPEP* § 2144, IV. Thus, it is not required by the reference, i.e. Kobayashi, to teach the same advantages as those disclosed by the applicants. Like Donohue, Kobayashi disclose advantages useful for

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conductive (or dielectric) films. Thus, it would have been obvious to one of ordinary skill in the art to employ the butyral resins having the claimed properties to obtain desired properties useful for conductive films. **(2)** The transitional term “comprising”, recited in the claims is inclusive or open-ended and does not exclude additional, unrecited elements or materials, such as those disclosed in Kobayashi, see *MPEP* § 2111.03. In addition, there is no negative teaching in Donohue in the usage of these additional materials taught by Kobayashi.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hannah Pak whose telephone number is (571) 270-5456. The examiner can normally be reached on Monday - alternating Fridays (7:30 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hannah Pak
Examiner
Art Unit 1796

/HP/

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796